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Two new species and a new Chinese record of *Exobasidium* (*Exobasidiales*)

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Abstract —Two new species, *Exobasidium yunnanense* on *Camellia sinensis* and *E. deqenense* on *Rhododendron* sp., are reported. They were collected from Yunnan Province. *Exobasidium canadense* on *Rhododendron* sp. and *Rhododendron mariesii* is a new Chinese record, from Jiangxi Province.

Key words —*Exobasidiomycetes*, symptoms, taxonomy

A new species of *Exobasidium* on *Camellia sinensis* was collected from Yunnan Province in 2005. The host plant belongs to the subfamily *Theoideae* of *Theaceae*. The *Exobasidium* species is parasitic on young leaves causing leaf spots. The upper side of the diseased leaves is slightly concave, and pale green; when mature the under side is covered with white hymenium. Usually there are several spots on each leaf. Transverse sections of a diseased leaf clearly show the differentiation of the palisade and mesophyll cells. There is slight hypertrophy of plant cells. The new species of *Exobasidium* is characterized by the number of sterigmata 2(–3) and the large basidiospores measuring 10–23(–25) × 4–6 µm. The leaf spot is similar to that caused by *Exobasidium vexans* Massee (Sawada 1919) on *Camellia sinensis*. However, *E. vexans* has smaller basidiospores, measuring 11–16 × 3.5–6 µm. The new species is described as:

Exobasidium yunnanense ZhenYing Li & L. Guo, **sp. nov.** Figs. 1,4–6
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Hymenium hypophyllum. Basidia hyalina, clavata vel cylindrica, 5–9 µm lata, terminaliter 2(–3) sterigmatibus 3–5.5 × 1–2 µm praedita. Basidiosporae ellipsoideae vel cylindricae,

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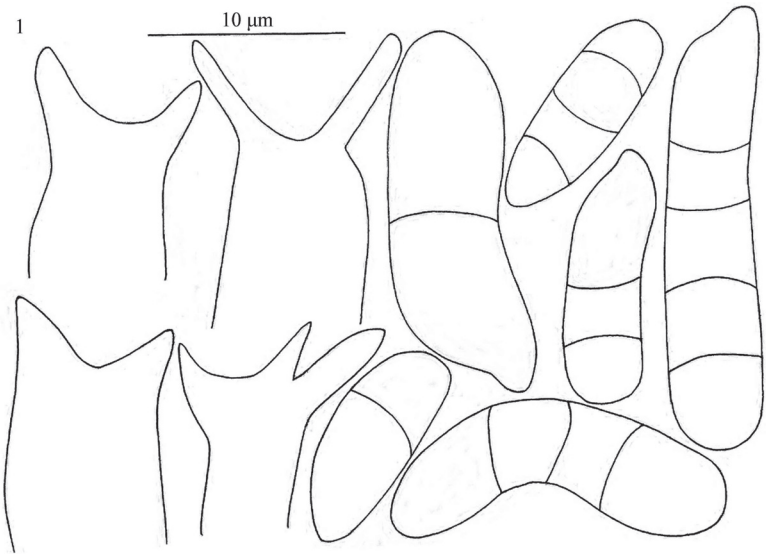

Fig. 1. Basidia, sterigmata, and basidiospores of *Exobasidium yunnanense* on *Camellia sinensis* (HMAS 167369, holotype).

interdum curvae, 10–23(–25) × 4–6 μm, hyalinae, laeves, primo continuae, dein 1–4(–5)-septatae.

Hymenium hypophyllous. Basidia hyaline, clavate or cylindrical, 5–9 μm wide, with 2(–3) sterigmata. Sterigmata conical, 3–5.5 × 1–2 μm. Basidiospores ellipsoidal or cylindrical, occasionally curved, 10–23(–25) × 4–6 μm, hyaline, smooth, at first continuous, then 1–4(–5)-septate.

Specimen examined—On *Camellia sinensis* (L.) Kuntze (*Theaceae*), Yunnan: Tengchong, alt. 2180 m, 19 IX 2005, Z.Y. Li, L. Guo & N. Liu 218, HMAS 167369 (holotype).

The second new species of *Exobasidium* was collected from Deqen, Yunnan Province, in 2000 by Prof. Zhuliang Yang. The new species is parasitic on young leaves of *Rhododendron* sp., causing leaf hypertrophy and deformation. The infected parts of the leaves are concave on the upper surface and convex on the lower surface. The diseased parts are subglobose to hemi-globose, 1–4 × 0.5–3 cm in size, usually one on each leaf. The color is yellowish brown when dry. This new species is characterized by the wide basidia (measuring 7.5–9 μm in width), the number and size of sterigmata [2(–3), measuring (4–)5–7.5 × 3–4.2 μm] and the wide basidiospores [(5–)6.5–8 μm in width]. Two other species of *Exobasidium* causing leaf spots on *Rhododendron* show similarities. The new species differs from *Exobasidium shiraianum* Henn. (Nagao et al. 2004), which has smaller sterigmata measuring 2–5 × 1–1.5 μm and differs from *E. taihokuense* Sawada (Sawada 1959), which has narrower basidia and

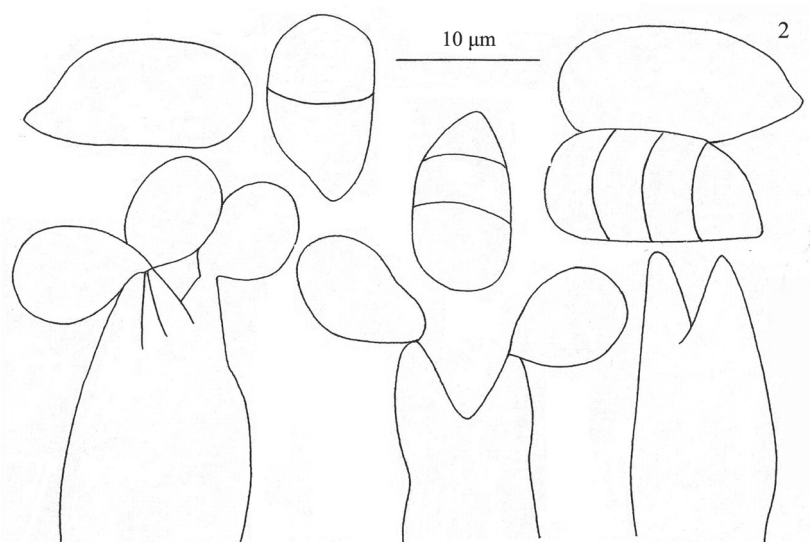

Fig. 2. Basidia, sterigmata, and basidiospores of *Exobasidium deqenense* on *Rhododendron* sp. (HKAS 36550, holotype).

basidiospores measuring 5–7 µm in width and 3.5–5 µm in width, respectively. The new species is described as:

Exobasidium deqenense ZhenYing Li & L. Guo, **sp. nov.** Figs. 2, 7–9

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Hymenium amphigenum. Basidia hyalina, cylindrica, 7.5–9 µm lata, terminaliter 2(–3) sterigmatibus (4–)5–7.5 × 3–4.2 µm praedita. Basidiosporae cylindricae vel subclavatae, (8–)13–16(–17) × (5–)6.5–8 µm, hyalinae, laeves, primo continuae, dein 1–3-septatae.

Hymenium amphigenous. Basidia hyaline, cylindrical, 7.5–9 µm wide with 2(–3) sterigmata. Sterigmata conical, (4–)5–7.5 × 3–4.2 µm. Basidiospores cylindrical or subclavate, (8–)13–16(–17) × (5–)6.5–8 µm, hyaline, smooth, at first continuous, then 1–3-septate.

Specimen examined—on *Rhododendron* sp. (*Ericaceae*), Yunnan: Deqen, Meilixueshan, alt. 4350 m, 30 VIII 2000, Z.L. Yang 3037, HKAS 36550 (holotype).

Exobasidium canadense, discovered in Jiangxi Province, is a new Chinese record. It is parasitic on *Rhododendron* sp. causing leaf spots, usually 1–3 on each leaf. The upper side of the diseased parts is slightly concave, pale yellow and when mature the under side is covered with white hymenium. The leaf spots can be up to 4.5 mm in diam. Transverse sections of the diseased leaf show the differentiation of the palisade and mesophyll cells clearly. There is no hypertrophy of plant cells.

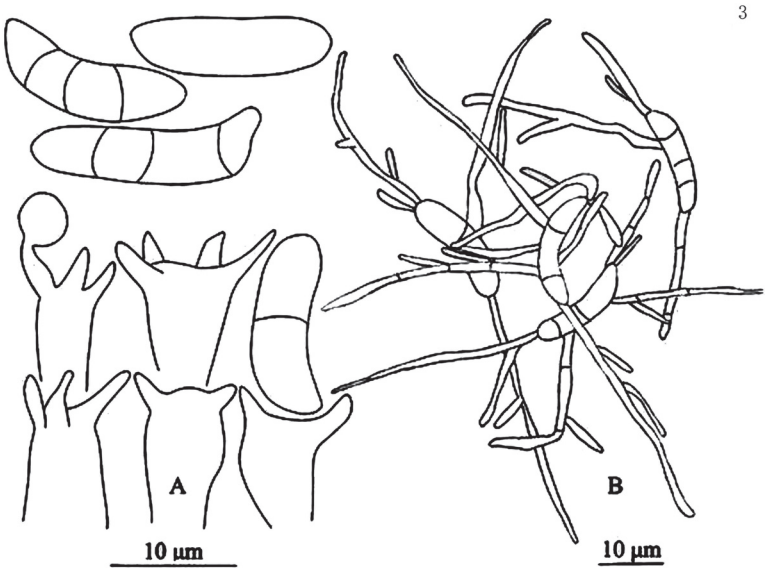

Fig. 3. Basidia, sterigmata and basidiospores of *Exobasidium canadense* on *Rhododendron* sp. (HMAS 167371). A. Basidia, sterigmata and basidiospores. B. Basidiospore germination.

Exobasidium canadense Savile, Can. J. Bot. 37: 651, 1959. **Figs. 3, 10–13**

Hymenium hypophyllous, white. Basidia hyaline, clavate or cylindrical, 7–40 × 4–8 μm, with 2–4 sterigmata. Sterigmata conical, 3.5–5.5 × 1.2–2.3 μm. Basidiospores ellipsoidal, often curved, 14–20 × 4–5 μm, hyaline, smooth, at first continuous, then 1–3(–4)-septate.

Specimens examined—On *Rhododendron* sp. (*Ericaceae*), Jiangxi: Jinggangshan, Shangjing, alt. 982 m, 22 IX 2006, Z.Y. Li, C.X. Lu & L. Guo 374, HMAS 167371. On *Rhododendron mariesii* Hemsl. & E.H.Wilson (*Ericaceae*), Jiangxi: Lushan Botanical Garden, 14 V 2007, Z.Y. Li & L. Guo 633, HMAS 173409.

Colonies on potato dextrose agar (PDA) grew slowly, to a maximum 12 mm diameter after 21 days incubation at 25°C. The colony was yellow and corrugate on the surface, composed of conidia. Conidia bacilliform, 5–9 × 1–1.2 μm.

Figs. 4–6. *Exobasidium yunnanense* on *Camellia sinensis* (HMAS 167369, holotype). 4. Symptoms. 5. Basidia, sterigmata and basidiospores as seen by LM. 6. Basidium and sterigmata as seen by SEM.

Figs. 7–9. *Exobasidium deqenense* on *Rhododendron* sp. (HKAS 36550, holotype). 7. Symptoms. 8. Basidia, sterigmata and basidiospores as seen by LM. 9. Basidium, sterigmata and basidiospores as seen by SEM.

Figs. 10–13. *Exobasidium canadense* on *Rhododendron* sp. (HMAS 167371). 10. Symptoms. 11. Colonies on PDA. 12. Basidiospores as seen by LM. 13. Basidia, sterigmata and basidiospores as seen by SEM.

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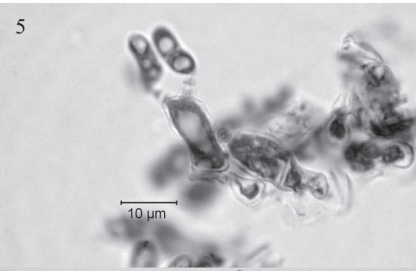
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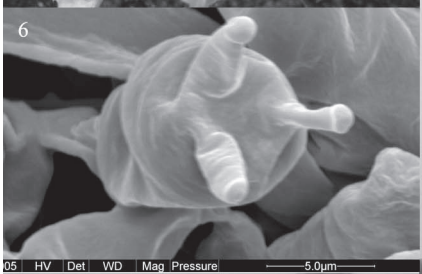
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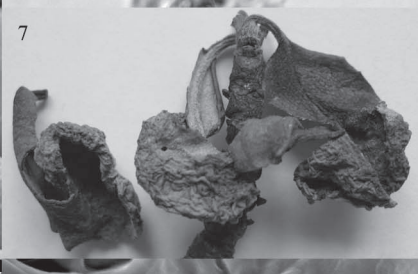
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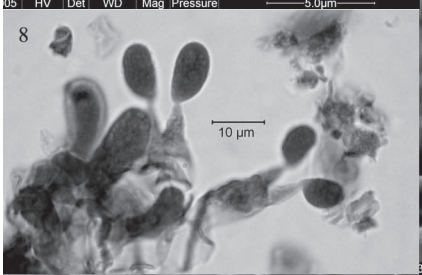
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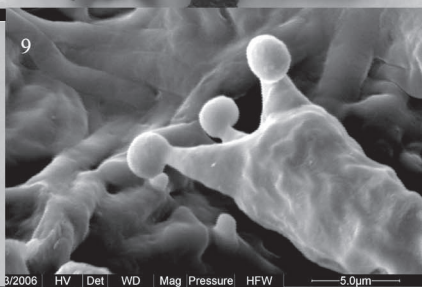
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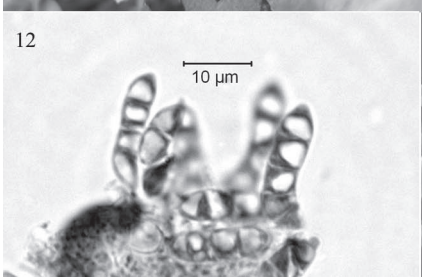
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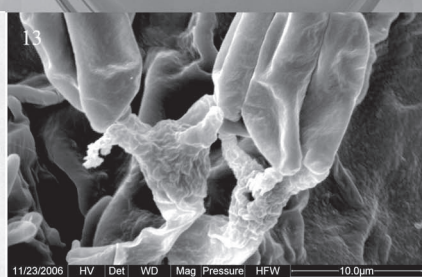
13
11/23/2006 HV Det WD Mag Pressure HFW 10.0µm

Thirty-one species of *Exobasidium* have been reported in China (Sawada 1922, Teng 1963, Tai 1979, Guo et al. 1991, Zang 1996, Li & Guo 2006a,b, 2008a,b, 2009), including the three species recorded in this paper.

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